

**Amendment and Response**

Applicant: Mohammad M. Samii

Serial No.: 10/634,424

Filed: August 5, 2003

Docket No.: 200205843-6

Title: PHOTSENSOR ACTIVATION OF AN EJECTION ELEMENT OF A FLUID-EJECTION DEVICE

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**REMARKS**

The following remarks are made in response to the Non-Final Office Action mailed May 5, 2005. In that Office Action, the Examiner rejected claims 1-4, 9, 13, 14, and 23 under 35 U.S.C. §103(a) as being unpatentable over Tamura et al., U.S. Patent No. 4,794,463 ("Tamura") in view of Werking, U.S. Patent No. 4,270,046 ("Werking"). Claims 10-12 were rejected under 35 U.S.C. §103(a) as being unpatentable over Tamura in view of Werking as applied to claim 1, and further in view of Sueoka et al., U.S. Patent No. 6,024,439 ("Sueoka"). Claims 1-4 were rejected under 35 U.S.C. §103(a) as being unpatentable over Maru et al., U.S. Patent No. 5,877,784 ("Maru") in view of Tamura and Werking. Claims 5-8 were rejected under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Tamura and Werking as applied to claims 1 and 4, and further in view of Millman et al., Microelectronics, Second Edition, McGraw-Hill, Inc., 1987, ("Millman").

With this Response, claim 23 has been amended. Claims 1-14 and 23 remain pending in the application and are presented for reconsideration and allowance.

**35 U.S.C. §103 Rejections**

The Examiner rejected claims 1-4, 9, 13, 14, and 23 under 35 U.S.C. §103(a) as being unpatentable over Tamura et al., U.S. Patent No. 4,794,463 ("Tamura") in view of Werking, U.S. Patent No. 4,270,046 ("Werking"). Independent claim 1 is directed to a printhead assembly and recites "a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements, each junction photosensor configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source." The Examiner acknowledged that Tamura does not teach or suggest a printhead assembly with junction photosensors as recited in independent claim 1. (Office Action at para. no. 1, page 3). The Examiner stated that Werking discloses a two terminal optical sensor in which a light sensor is a photodiode or phototransistor, and that it would have been obvious to modify the printhead disclosed by Tamura to replace the photoconductive by the photodiode or phototransistor disclosed by Werking. (Office Action at para. no. 1, page 3). The Examiner stated that the motivation for making this modification would be to reduce the effect of temperature on the device and

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allow for a possible increase in breakdown voltage, and cited Werking at column 3, lines 55-60 to support this contention. (Office Action at para. no. 1, page 3).

There is no teaching or suggestion to combine the cited references in a manner that would produce the claimed invention. The Federal Circuit has stated that “[i]n holding an invention obvious in view of a combination of references, there must be some suggestion, motivation, or teaching in the prior art that would have led a person of ordinary skill in the art to select the references and combine them in the way that would produce the claimed invention.” *Karsten Manufacturing Corp. vs. Cleveland Golf Co.*, 58 U.S.P.Q.2d 1286, 1293 (CAFC 2001). Werking discloses a two-terminal optical sensor (TOS) for sensing a remote object that moves into the optical path of the sensor. (Werking at Abstract). There is no teaching or suggestion in Werking regarding printheads. There is no teaching or suggestion in Werking that it would be advantageous or desirable to use the TOS or any portion thereof in a printhead. There is no teaching or suggestion in Tamura that it would be advantageous or desirable to use a TOS, or any portion of a TOS, in the printhead disclosed in Tamura.

Werking at column 3, lines 55-60, which was cited by the Examiner as providing the motivation for the combination, discloses that “a photodiode light sensor used in the photovoltaic mode rather than the photoconductive more (sic) would reduce the effect of temperature on the TOS and allow for a possible increase in breakdown voltage.” Thus, this cited portion of Werking discusses the mode of operation or bias of the photodiode. A photodiode is unbiased in the photovoltaic mode and reverse biased in the photoconductive mode. The cited portion of Werking does not provide any teaching, suggestion, or motivation for replacing the photoconductive material disclosed in Tamura with the photodiode disclosed in Werking.

In view of the above, independent claim 1 is not taught or suggested by Tamura and Werking, either alone, or in combination. Applicant respectfully traverses the Examiner’s rejection of claim 1, requests removal of the rejection of claim 1 under 35 U.S.C. §103(a), and requests allowance of this claim. Dependent claims 2-4, 9, 13, and 14 further define patentably distinct claim 1, are further distinguishable over the cited references, and are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 2-4, 9, 13, and 14 under 35 U.S.C. §103(a), and requests allowance of these claims.

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Independent claim 23, as amended herein, recites “a junction photosensor coupled to the ejection element, the photosensor configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source.” As described above, Tamura and Werking do not teach or suggest “a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements, each junction photosensor configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source”, as recited in independent claim 1. For the reasons set forth above with respect to claim 1, Tamura and Werking also do not teach or suggest the above-quoted limitations of claim 23. Applicant respectfully requests removal of the rejection of claim 23 under 35 U.S.C. §103(a), and requests allowance of this claim.

The Examiner rejected claims 10-12 under 35 U.S.C. §103(a) as being unpatentable over Tamura in view of Werking as applied to claim 1, and further in view of Sueoka et al., U.S. Patent No. 6,024,439 (“Sueoka”). Claims 10-12 are dependent on independent claim 1. As described above, Tamura and Werking do not teach or suggest “a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements, each junction photosensor configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source”, as recited in independent claim 1. Sueoka also does not teach or suggest this limitation of claim 1.

In view of the above, dependent claims 10-12, which further define patentably distinct claim 1 and are further distinguishable over the cited references, are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 10-12 under 35 U.S.C. §103(a), and requests allowance of these claims.

The Examiner rejected claims 1-4 under 35 U.S.C. §103(a) as being unpatentable over Maru et al., U.S. Patent No. 5,877,784 (“Maru”) in view of Tamura and Werking. The Examiner acknowledged that Tamura and Maru do not teach or suggest a printhead assembly with junction photosensors as recited in independent claim 1. (Office Action at para. no. 3, page 6). The Examiner stated that Werking discloses a two terminal optical sensor in which a light sensor is a photodiode or phototransistor, and that it would have been obvious to modify the printhead disclosed by Maru and Tamura to replace the photoconductive by the

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photodiode or phototransistor disclosed by Werking. (Office Action at para. no. 3, page 6). The Examiner stated that the motivation for making this modification would be to reduce the effect of temperature on the device and allow for a possible increase in breakdown voltage, and cited Werking at column 3, lines 55-60 to support this contention. (Office Action at para. no. 3, page 6).

There is no teaching or suggestion to combine the cited references in a manner that would produce the claimed invention. Werking discloses a two-terminal optical sensor (TOS) for sensing a remote object that moves into the optical path of the sensor. (Werking at Abstract). There is no teaching or suggestion in Werking regarding printheads. There is no teaching or suggestion in Werking that it would be advantageous or desirable to use the TOS or any portion thereof in a printhead. There is no teaching or suggestion in Maru or Tamura that it would be advantageous or desirable to use a TOS, or any portion of a TOS, in a printhead.

Werking at column 3, lines 55-60, which was cited by the Examiner as providing the motivation for the combination, discloses that “a photodiode light sensor used in the photovoltaic mode rather than the photoconductive more (sic) would reduce the effect of temperature on the TOS and allow for a possible increase in breakdown voltage.” Thus, this cited portion of Werking discusses the mode of operation or bias of the photodiode, and does not provide any teaching, suggestion, or motivation for replacing the photoconductive material disclosed in Tamura or the electrothermal transducers disclosed in Maru with the photodiode disclosed in Werking.

In view of the above, independent claim 1 is not taught or suggested by Maru, Tamura, and Werking, either alone, or in combination. Applicant respectfully traverses the Examiner’s rejection of claim 1, requests removal of the rejection of claim 1 under 35 U.S.C. §103(a), and requests allowance of this claim. Dependent claims 2-4 further define patentably distinct claim 1, are further distinguishable over the cited references, and are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 2-4 under 35 U.S.C. §103(a), and requests allowance of these claims.

The Examiner rejected claims 5-8 under 35 U.S.C. §103(a) as being unpatentable over Maru in view of Tamura and Werking as applied to claims 1 and 4, and further in view of Millman et al., Microelectronics, Second Edition, McGraw-Hill, Inc., 1987, (“Millman”).

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Claims 5-8 are dependent on independent claim 1. As described above, Maru, Tamura, and Werking do not teach or suggest "a plurality of junction photosensors, each junction photosensor coupled to one of the ejection elements, each junction photosensor configured to generate an activation signal that causes the ejection element coupled to the photosensor to be activated when the photosensor is illuminated by a light source", as recited in independent claim 1. Millman also does not teach or suggest this limitation of claim 1.

In view of the above, dependent claims 5-8, which further define patentably distinct claim 1 and are further distinguishable over the cited references, are believed to be allowable over the cited prior art. Applicant respectfully requests removal of the rejection of claims 5-8 under 35 U.S.C. §103(a), and requests allowance of these claims.

**CONCLUSION**

In view of the above, Applicant respectfully submits that pending claims 1-14 and 23 are in form for allowance and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1-14 and 23 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 08-2025.

The Examiner is invited to contact the Applicant's representative at the below-listed telephone numbers to facilitate prosecution of this application.

Any inquiry regarding this Amendment and Response should be directed to James R. McDaniel at Telephone No. (208) 396-4095, Facsimile No. (208) 396-3958 or Jeff A. Holmen at Telephone No. (612) 573-0178, Facsimile No. (612) 573-2005. In addition, all correspondence should continue to be directed to the following address:

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Respectfully submitted,

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**CERTIFICATE UNDER 37 C.F.R. 1.8:**

The undersigned hereby certifies that this paper or papers, as described herein, are being deposited in the United States Postal Service, as first class mail, in an envelope address to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450 on this 3rd day of August, 2005.

By Jeff A. Holmen  
Name: Jeff A. Holmen